Aviation Week
and Space Technology
A McGraw-Hill Publication

April 17, 1961

Missile Defense Dominates PMR Efforts

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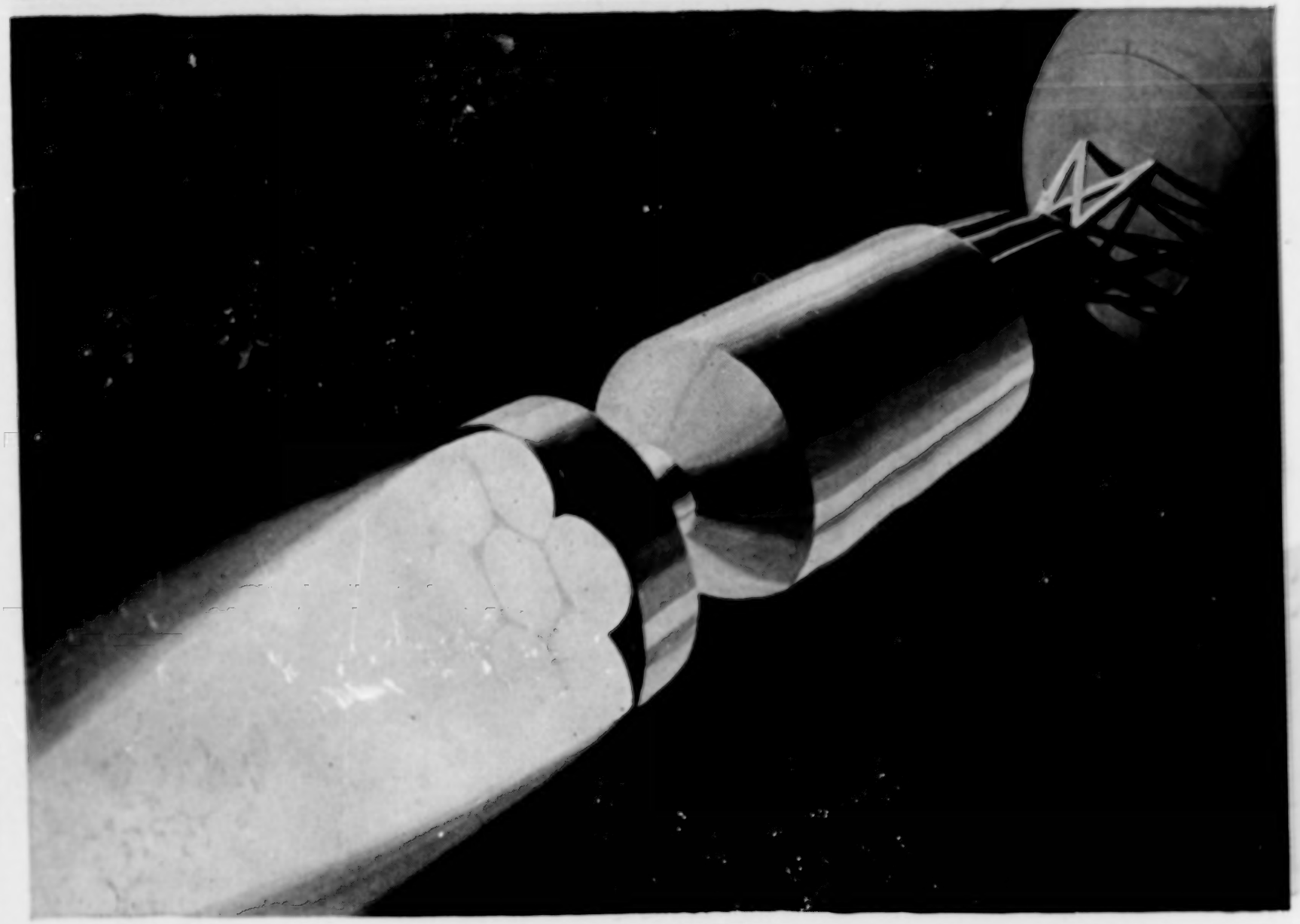
ITT's Vortac Antenna Rotating Assembly

NUCLEAR ROCKET PROPULSION AT AEROJET-GENERAL



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These programs have resulted in significant progress toward the development of a practical and reliable nuclear propulsion system. They are based on Aerojet's combined experience in liquid and solid propellant rocketry, nuclear technology, and cryogenics—experience which ensures that the challenge of a new era in propulsion can, and will, be met.

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AVIATION CALENDAR

Apr. 24-27—32nd Meeting, Aerospace Medical Assn., Palmer House, Chicago.

Apr. 25-27—Ninth Annual Conference on Electromagnetic Relays, Oklahoma State University, Stillwater, Okla.

Apr. 26—Session on Air Transport Problems, Society of Automotive Engineers' Pacific Northwest Section, New Washington Hotel, Seattle, Wash.

Apr. 26-27—High Temperature Materials Conference, American Institute of Mining, Metallurgical and Petroleum Engineers, Pick-Carter Hotel, Cleveland, Ohio.

Apr. 26-28—Liquid Rockets, Propellants and Combustion Conference, American Rocket Society, Palm Beach, Fla.

Apr. 26-28—Seventh Region Technical Conference, Institute of Radio Engineers, Hotel Westward Ho, Phoenix, Ariz.

Apr. 27-29—13th Annual Air Meet, National Intercollegiate Flying Assn., Texas A&M College, College Station, Tex.

Apr. 30-May 4—Seventh National Aerospace Instrumentation Symposium, Instrument Society of America, Adolphus Hotel, Houston, Tex.

Apr. 30-May 6—Annual Meeting and News Conference, Aviation/Space Writers Assn., Hotel Commodore, New York.

May 2-4—Electronic Components Conference, Institute of Radio Engineers, Jack Tarr Hotel, San Francisco, Calif.

May 3-5—17th Annual National Forum, American Helicopter Society, Sheraton Park Hotel, Washington, D. C.

May 3-5—Nuclear Applications in Space Conference, American Rocket Society/Oak Ridge National Laboratory, Gatlinburg, Tenn.

(Continued on page 6)

AVIATION WEEK and Space Technology

April 17, 1961
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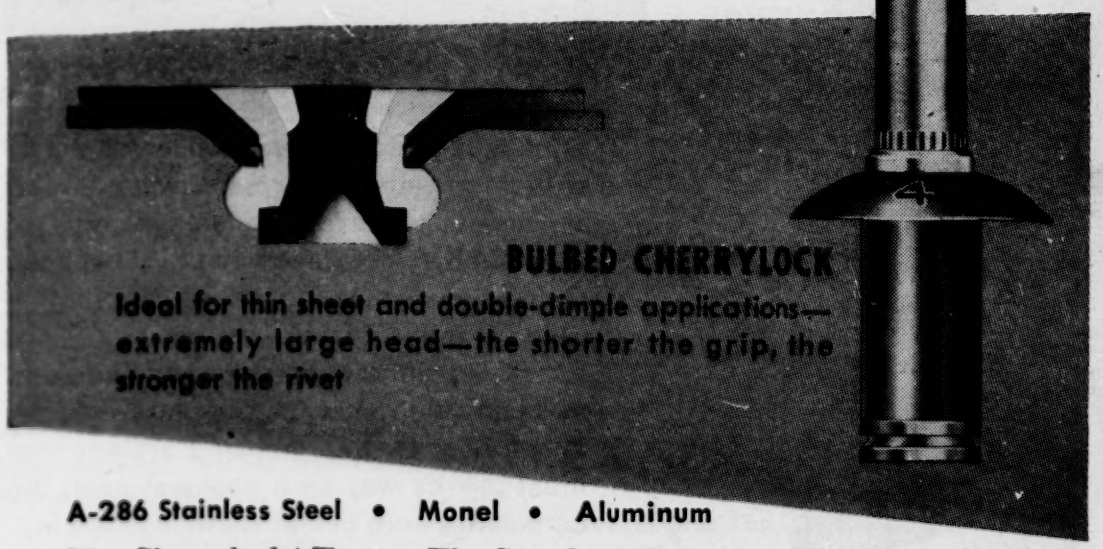

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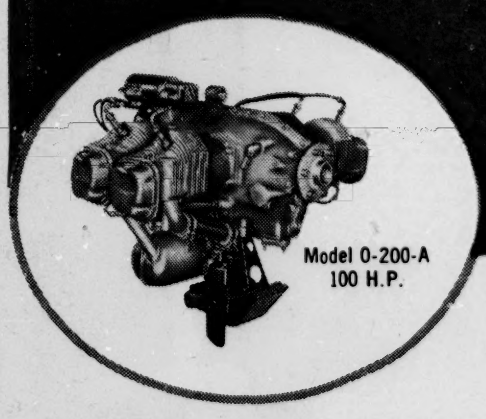

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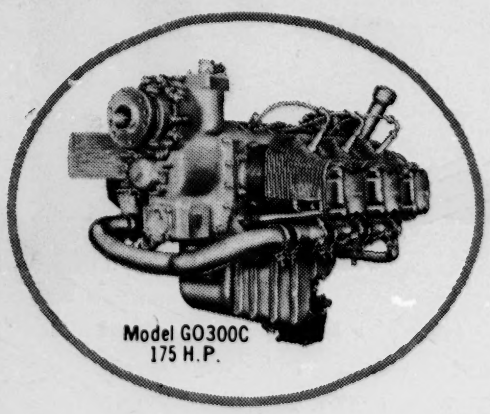

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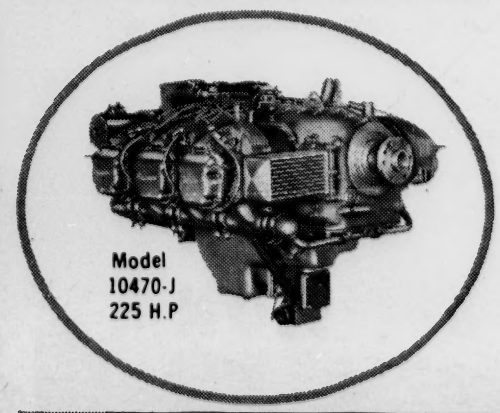

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AVIATION CALENDAR

(Continued from page 5)

May 4-5—Second National Symposium, Human Factors in Electronics, Institute of Radio Engineers, Marriott-Twin Bridges Motor Hotel, Arlington, Va.

May 6-9—Fifth Midwest Symposium on Circuit Theory, Institute of Radio Engineers, University of Illinois, Urbana.

May 8-10—Spring Lubrication Symposium, American Society of Mechanical Engineers, Deauville Hotel, Miami Beach.

May 8-10—National Aerospace Electronics Conference, IRE, Miami and Biltmore Hotels, Dayton, Ohio.

May 8-12—Annual Meeting, Airport Operators Council, Carillon Hotel, Miami Beach, Fla. (AOC-American Society of Civil Engineers' Joint Seminar, "Increased Capacity of Airport Systems," May 11-12.)

May 9-11—Western Joint Computer Conference and Exhibit, Ambassador Hotel, Los Angeles, Calif.

May 10-12—Spring Meeting, Society for Experimental Stress Analysis, Benjamin Franklin Hotel, Philadelphia, Pa.

May 11—Air Force Office of Scientific Research Lecture and Banquet in honor of the 80th Anniversary of Theodore von Karman, Sheraton Park Hotel, Washington, D. C.

May 12—National Armed Forces Day Dinner, Sheraton Park Hotel, Washington, D. C.

May 12-14—Mid-America Air Fair, Municipal Airport, Wichita, Kan.

May 15-16—Region One Air Traffic Control Assn. Convention, Hotel Bradford, Boston, Mass.

May 15-16—Aviation Fire Safety Seminar and Technical Session, National Fire Protection Assn., Hilton Statler Hotel, Detroit, Mich.

May 15-17—National Symposium on Microwave Theory and Techniques, IRE, Sheraton Park Hotel, Washington, D. C.

May 15-18—20th Annual National Conference, Society of Aeronautical Weight Engineers, Sheraton Hotel, Akron, Ohio.

May 22-24—National Telemetering Conference, Sheraton-Towers Hotel, Chicago, Ill.

May 22-24—Fifth National Symposium on Global Communications, Institute of Radio Engineers, Hotel Sherman, Chicago.

May 26-June 4—24th French International Air Show, Le Bourget, Paris, France.

May 27-30—13th Annual Wright Memorial Glider Meet, Soaring Society of Dayton, Dayton, Ohio.

May 31-June 2—University of Michigan's Seventh Annual Radar Symposium, Ann Arbor, Mich.

June 2-3—12th National Maintenance and Operations Meeting, Reading Aviation Service, Inc., Reading, Pa.

June 13-15—National Joint Meeting, Institute of the Aerospace Sciences and American Rocket Society, Ambassador Hotel, Los Angeles, Calif.

July 25-Aug. 10—International Trade Fair and Aviation Exhibition, McCormick Place Exposition Center, Chicago, Ill.

Aug. 22-25—Western Electronic Show and Convention, Cow Palace, San Francisco.

Sept. 4-10—1961 Flying Display and Exhibition, Society of British Aircraft Constructors, Farnborough, England.

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COVER: Rotating assembly of Vortac antenna being produced at International Telephone and Telegraph Corp.'s Federal Laboratories in Nutley, N. J., is inspected during final assembly. Supervisor is checking alignment of parasitic elements (fine-gage wires) on the Vortac antenna's rotating assembly. Heat lamps underneath are used in curing the epoxy used to affix the elements to the glass-fiber cylinder. ITT is a major supplier for Federal Aviation Agency's Vortac system.

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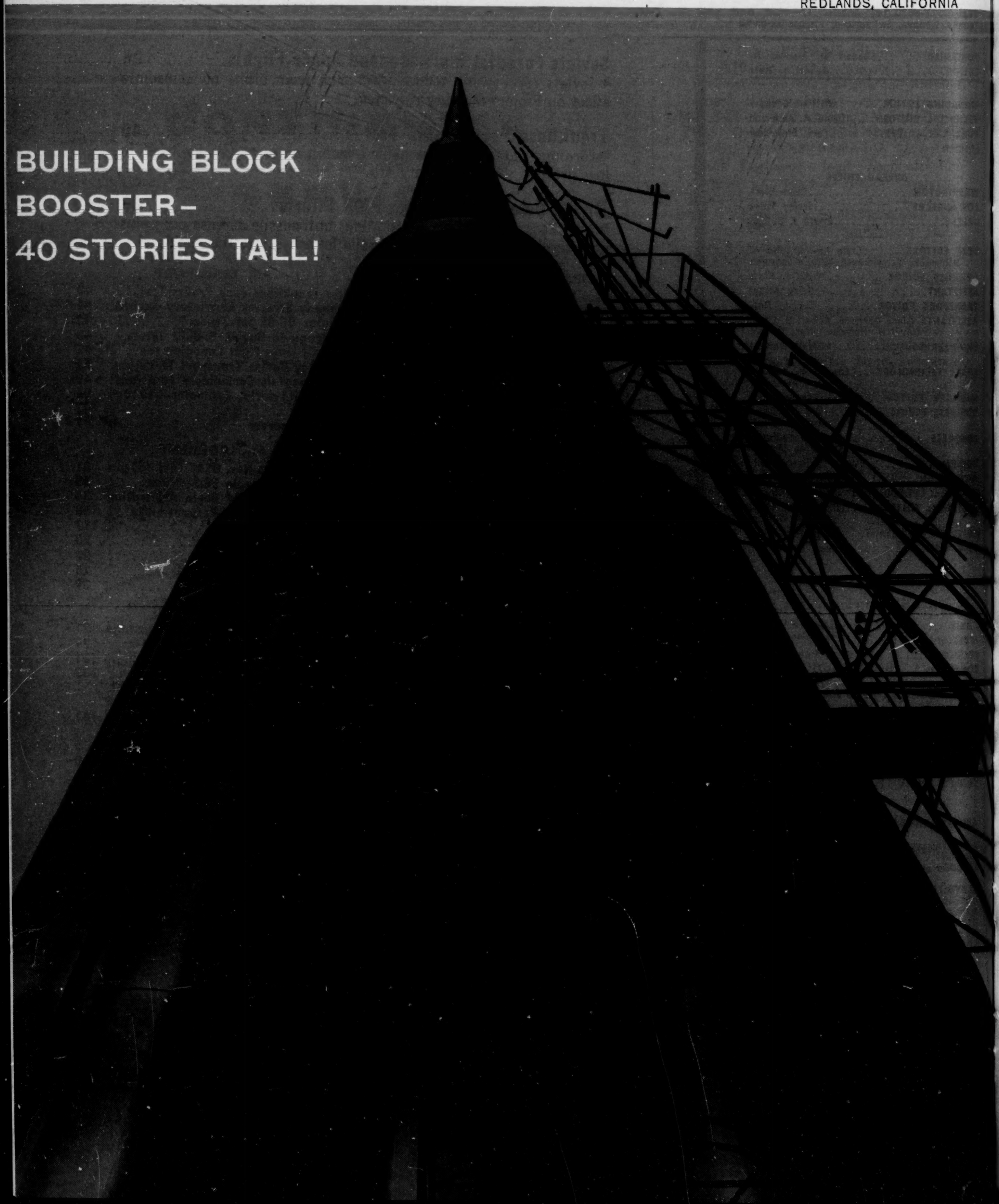

EDITORIAL

First Man in Space

Less than 1,300 days after the space age began Oct. 4, 1957 with the first Soviet satellite in orbit, the first man has orbited through space and made a successful return to earth. This is indeed a significant milestone in man's long struggle to master his environment. No American can help feeling a twinge of regret that it is a Russian name--Maj. Yuri Gagarin—that will be chiseled on this milestone, and not one of our countrymen. The nation that was able to carve the name of the Wright brothers on the granite of Kitty Hawk as the first men to achieve powered flight successfully should also look deep into its national soul and ask why we have lost this leadership in the extension of manned flight.

There are many similarities between Maj. Gagarin's historic orbit of the earth and the first lifting of Orville Wright off the sands of Kitty Hawk. Only perceptive observers were able to see the eventual significance of both events when they happened. Just as there were skeptics who for decades doubted that the "flying machine" would have any commercial or military significance, so there are conservative scientists, many of them still sitting in seats of honor, who will denigrate the first manned space flight as foretelling little significance for the future.

But just as those first short flights at Kitty Hawk spawned the tremendous influence of aviation on our civilization of the past 50 years, so does Maj. Gagarin's single orbit of the globe portend an equally significant influence for the inhabitants of this world in their knowledge and use of the infinite space that surrounds them.

For this nation, it is another blow to our national pride and international prestige in a series of setbacks that began with the first Sputnik and has continued through the first moon probes, the first Venus probe and the first recovery of living animals from orbital flight. It is alarming to see that our national leadership, regardless of the change of party in control, still remains pleasantly anesthetized to these painful episodes in the history of our times. We sense the same platitudes emanating from official sources, the same lack of urgency about our own space programs and the same unwillingness to make maximum use of our scientific and industrial resources in an attempt to end this futile stern chase of the Soviets.

It is becoming more and more evident that there is a wide gulf between campaign oratory and executive responsibility. There has been precious little indication that President Kennedy really understands much of the significance of the space race or really intends to do much about improving this nation's capability.

The responsibility for this nation's losing the man-in-space race certainly does not rest with President Kennedy and his advisers, but it will not be long before other Soviet achievements will continue to emphasize the futility of our chase philosophy. Then the onus will be inescapably theirs.

The Soviets' victory in successfully orbiting and recovering the first man in space cannot be blamed entirely on the "booster lag" which has now become the favorite official cliche to explain away all of the deficiencies of our national space program. From all available evidence, it appears that the U.S. and USSR came to the starting mark in the man-in-space race about the same time—roughly the summer of 1958, about nine months after Sputnik I.

It is true that the Soviets' superiority in being able to design for a 10,000-lb. space vehicle gave them substantial advantages over the 2,300-lb. weight limit rigidly imposed on the Mercury capsule because of the wide disparity in booster power available in the contending camps. The time required to miniaturize all Mercury capsule equipment and the difficult decisions over what to omit from it were problems the Soviet technicians did not have to face.

For a variety of reasons, the Mercury program was not laid on as solid a bioastronautics foundation as was the Soviet effort. Their work with animals and other forms of life in both ballistic and orbital shots gave them far more data than the few U.S. space biology experiments that were authorized. And we doubt that the Soviet man-in-space team was hampered by a constant stream of skepticism over both the techniques and purposes of their goal, such as the Mercury personnel endured from U.S. savants who had not one iota of specific contact with the program as it progressed.

As it looks now, the Mercury project could get its first astronaut into orbit shortly before the end of the year. We expect there will be some shouts to scrap this project now that the Soviets have scored a first. Nothing could be greater folly. We will badly need the data from the Mercury project as the foundation for future manned space flight projects, including the military Dyna-Soar and Aerospace Plane, as well as NASA's Apollo and other projects looming even farther out on the technical horizon. We can hardly expect to get this data from the Soviets.

Maj. Gagarin's flight proved that it is possible for man to survive orbital space flight and exercise most of his basic functions during such flight. Now the major task will involve extending the range of man's useful functions in space flights of various types—including landing on other planets and deep space exploration, as well as work in the orbital ranges below the Van Allen belts.

Even though it is possible for the Soviets to put more of their cosmonauts into space flights of increasing duration and variation before the first U.S. astronaut makes the first attempt at orbital flight, we must guard against a slow-down or scuttling of this program.

The role of man in space has just begun, and the race for its ultimate rewards is far from run. Again we have come off slow from the mark and are lagging on the first lap. But this nation has the ability to catch and surpass the Soviets before this race is fully run if it can only develop the determination to do so in its top leadership.

—Robert Hotz